

Application No.: 09/683,713
Amendment dated: May 20, 2004
Reply to Office Action of January 20, 2004

This listing of claims will replace all prior versions and listings of claims in this application:

a.) Listing of Claims

1. (Previously Presented) A double confocal scanning microscope comprising:
 - a light source defining an illuminating beam path with an inherent unmodified illumination point spread function (PSF), the illuminating beam path having a length;
 - a detector defining a detection beam path with an inherent unmodified detection point spread function (PSF), and
 - two spaced apart microscope objectives for focusing light propagating along the illumination beam path onto a specimen which is disposed in a common specimen plane defined by the two microscope objectives, the length of the illuminating beam path being the same for both microscope objectives; and
 - at least one optical component disposed in the illuminating or detection beam path, wherein the optical component is configured to vary the amplitude, phase or polarization of the light and thereby to modify a shape of the unmodified illumination PSF of the light in the illuminating beam path to produce a modified illumination PSF or of the unmodified detection PSF in the detection beam path to produce a modified detection PSF, wherein secondary maxima of modified and unmodified PSFs are located at different axial positions causing reduction of intensity of secondary maxima of an overall PSF produced by the modified illumination PSF and/or modified detection PSF.
2. (Cancelled)
3. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the unmodified illumination PSF in the illumination beam path and the unmodified detection PSF in the detection beam path shows axially

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arranged secondary maxima both of which are modifiable as to their shape or position.

4. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is used to increase the distance between a principal maximum of the modified illumination PSF in the illumination beam path or a principal maximum of the modified detection PSF in the detection beam and secondary maxima.
5. (Cancelled)
6. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is used to locate the secondary maxima of the modified illumination PSF in the illuminating beam path or the modified detection PSF in the detection beam path at different axial positions.
7. (Cancelled)
8. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component modulates the wave front of the illuminating light or detection light.
9. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is disposed in a pupil of at least one microscope objective or in a plane optically conjugated therewith.

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10. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is disposed at any desired location in the illuminating beam path or the detection beam path.
11. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is an amplitude filter and a phase filter.
12. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is a retardation plate or phase plate.
13. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is an LCD (liquid crystal device) arrangement.
14. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is configured as partially amplitude-modifying elements.
15. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is configured as an adaptive optical system comprising a deformable mirror.
16. (Previously Presented) The double confocal scanning microscope as defined in Claim 1, wherein the optical component is embodied as a dichroic filter that is disposed in the illuminating beam path or the detection beam path.
17. (Cancelled)
18. (Cancelled)